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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CHOWDHURY, SUMAIYA A	

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 11/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/910,412	GURANTZ ET AL.	
	Examiner	Art Unit	
	Sumaiya A. Chowdhury	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 September 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5,18 and 23-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5,18 and 23-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 5, 18, and 23-35, have been considered but are moot in view of the new ground(s) of rejection.

(a) Applicant argues in regard to claim 5 "Neither Li nor Langlais ...over the building wiring", on page 6, 1st paragraph of the Remarks filed 9/14/06.

In claim 5, Applicant claims "a plurality of terminal devices, wherein the signal modulation used by the terminal devices is orthogonal frequency division multiplexing". Langlais was brought in to teach this particular limitation. In claim 5, Applicant did not claim anything regarding the multipath condition created by a strong signal reflection intentionally created within the building wiring.

(b) Applicant argues in regard to claim 5 "Langlais does not disclose the use or benefit of a signal reflector", on page 6, 2nd paragraph of the Remarks filed 9/14/06.

Li was brought in to teach that particular limitation.

(c) Applicant argues in regard to claim 5 "Li does not disclose a system that enables terminal devices to communicate bidirectionally with other terminal devices, but instead only discloses a system that allows one device to broadcast to several devices", on page 6, 4th paragraph of the Remarks filed 9/14/06.

The slave decoder communicates with the master decoder and vice versa. Therefore, there is bidirectional communication with the reflected signal created by the splitter.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Manchester and Langlais.

Considering claim 5, Li discloses a signal distribution network for transmitting modulated signals using building wiring containing a plurality of branches comprising:

a network interface device (22 – Fig. 2) located at the point of entry of the building wiring (col. 2, lines 15-30) that reflects network signals originating in the building wiring back into all branches of the building wiring (The signal from (26 – Fig. 2) are **reflected** to (28, 30, 32 – Fig. 2). – col. 2, lines 55-65), wherein the network interface device is frequency dependent and reflects signals by reflecting a predetermined frequency band of signals (col. 2, lines 15-20, lines 60-67).

at least one signal splitter (splitter reflector 24 – Fig. 2); and

a plurality of terminal devices (28, 30, 32 – Fig. 2).

However Li fails to teach the following:

The signal distribution network uses coaxial cable wiring;

The signal modulation used by the terminal devices is orthogonal frequency division multiplexing;

In an analogous art, Manchester teaches wherein the building wiring consists of coaxial cable (128, 138, 150 – Fig. 1; col. 3, line 50 – col. 4, line 15) in order to use wiring which is prevalent in existing buildings.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Li's invention to include the building wiring is coaxial cable, as taught by Manchester, for the advantage of using wiring which is prevalent in existing buildings.

However, Li and Manchester fail to teach:

The signal modulation used by the terminal devices is orthogonal frequency division multiplexing;

In an analogous art, Langlais discloses a transmission system in which OFDM is employed to provide increased robustness against frequency selective fading or narrowband interference. – col. 10, lines 55-58.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Li and Manchester's system to include orthogonal frequency division multiplexing as the desired type of signal modulation, as taught by

Langlais, for the advantage of providing a more robust communication technique for distributing signals.

4. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Manchester and Langlais as applied to claim 5 above, and further in view of Horton.

Considering claim 18, Li, Manchester, and Langlais fail to disclose that the terminal devices communicate with each other using time division duplex protocol.

In an analogous art, Horton discloses a cable network in which Time Division Multiple Access (TDMA) is implemented to facilitate communication in both the upstream and downstream direction – col. 4, lines 9-16.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Li, Manchester, and Langlais' system to include TDMA, as taught by Horton, for the advantage of facilitating communications between devices wherein a single frequency supports simultaneous data channels.

5. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li, Manchester, Langlais, and Horton as applied to claim 18 above, and further in view of Ling (6771706).

As for claim 23, Li, Manchester, Langlais, and Horton fail to teach wherein the modulation order of each OFDM carrier is adjusted according to the signal to noise ratio (SNR) at each OFDM carrier frequency.

In an analogous art, Ling teaches the coding for each transmission channel IS adjusted such that the information bit rate matches the transmission capability supported by the channel SNR. Additionally, the modulation scheme for the transmission channel is selected based on the channel SNR. Other processing (e.g., interleaving) may also be adjusted and are within the scope of the invention. The adjustment of the processing for each transmission channel based on the determined SNR for the channel allows the MIMO system to achieve high performance (i.e., high throughput or bit rate for a particular level of performance). – col. 20, lines 45-60

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Li, Manchester, Langlais, and Horton's invention to include the above mentioned limitation, as taught by Ling, for the advantage of achieving high throughput or bit rate for a particular level of performance.

6. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li, Manchester, Langlais, and Horton, as applied to claim 18 above, and further in view of Zhang (US 2002/0145968).

As for claim 24, Li, Manchester, Langlais, and Horton fail to teach wherein the power level of each OFDM carrier is adjusted according to the signal loss at each OFDM carrier frequency.

In an analogous art, Zhang teaches the power level of each OFDM carrier is adjusted according to the signal loss at each OFDM carrier frequency – [0015].

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Li, Manchester, Langlais, and Horton's invention to include the above mentioned limitation, as taught by Zhang, in order to achieve minimal signal loss.

7. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Langlais.

As for claim 25, Li teaches:

a network interface device (22 - Fig. 2) connected to the point of entry (20 – Fig. 2) of the building wiring comprising:

a first port (Referring to Fig. 2 the port where 20 intersects 22) connected to the point of entry side of a branch of the building wiring – col. 2, lines 15-20;

a second port (Referring to Fig. 2, the port where the incoming signal from the cable distribution is outputted from) connected to the terminal device side of a branch of the building wiring – col. 2, lines 18-28;

a frequency selective signal reflecting circuit (circuitry within 22 which reflects the 10.7 MHz signal) connected between the first and second port - col. 2, lines 55-65;

wherein a signal received at the second port is reflected out the second port and back into all the building wiring branches and a reflect signal path is created (The master decoder 26 sends a signal upstream which is reflected by the network interface device and is subsequently transmitted to the slave decoders (28, 30, 32) – col. 2, lines 55-67).

a plurality of terminal devices (28, 30, 32 – Fig. 2) connected to the wiring branches (control carrier – Fig. 1) – col. 2, lines 20-30, lines 43-67.

each terminal device bidirectionally communicating with other terminal devices through the reflected signal path created by the network interface device (22 – Fig. 2) – (The slave decoder communicates with the master decoder and vice versa. Therefore, there is bidirectional communication with the reflected signal created by the splitter. col. 2, lines 54-67).

However, Li fails to teach

using orthogonal frequency division multiplexing (ODFM) modulation.

In an analogous art, Langlais discloses a transmission system in which OFDM is employed to provide increased robustness against frequency selective fading or narrowband interference. – col. 10, lines 55-58.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Li's system to include orthogonal frequency division

multiplexing as the desired type of signal modulation, as taught by Langlais, for the advantage of providing a more robust communication technique for distributing signals.

8. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Langlais as applied to claim 25 above, and further in view of Ling.

Claim 26 contains the limitations of claim 23 and is analyzed as previously discussed with respect to that claim.

9. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Langlais as applied to claim 25 above, and further in view of Zhang.

Claim 27 contains the limitations of claim 24 and is analyzed as previously discussed with respect to that claim.

10. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Langlais as applied to claim 25 above, and further in view of Van Cleave (4864613).

As for claim 28, Li and Langlais fail to teach the frequency used for communicating is above the cable television band.

In an analogous art, Van Cleave teaches signals are converted to an intermediate frequency above the cable television band, in order to reduce distortion – col. 6, lines 50-63.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Li and Langlais' invention to include the above mentioned limitation, as taught by Van Cleave, for the advantage of reducing distortion.

11. Claims 29, 30, and 33, are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Manchester, Langlais, and Mukherjee (6226322)

Claim 29 contains the limitations of claims 5 and 25 and is analyzed as previously discussed with respect to those claims. Claim 29 additionally calls for the following:

wherein the terminal devices perform equalization on the received signal.

In an analogous art, Mukherjee teaches the terminal devices perform equalization on the received signal – col. 8, lines 40-52.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Li, Manchester, and Langlais' invention to include the above mentioned limitation, as taught by Mukherjee, for the advantage of flattening the signal spectrum and compensating for phase distortion.

As for claim 30, Li, Manchester, Langlais, and Mukherjee disclose the claimed limitations. In particular, Mukherjee teaches equalization is frequency domain equalization that restores a flat frequency response to overcome multipath effects.

As for claim 33, Li, Manchester, Langlais, and Mukherjee, disclose the claimed limitations. In particular, Langlais teaches wherein the terminal devices use orthogonal frequency division multiplexing (OFDM) modulation – col. 10, lines 55-58.

12. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li, Manchester, Langlais, and Mukherjee as applied to claim 29 above, and further in view of Kapoor (6,396,886).

As for claim 31, Li, Manchester, Langlais, and Mukherjee fail to teach wherein equalization is time domain equalization that restores a flat frequency response to overcome multipath effects.

In an analogous art, Kapoor teaches wherein equalization is time domain equalization that restores a flat frequency response to overcome multipath effects – col. 6, lines 47-63.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Li, Manchester, Langlais, and Mukherjee's invention to

include the above mentioned limitation, as taught by Kapoor, for the advantage of restoring the frequency envelope.

13. Claims 32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li, Manchester, Langlais, and Mukherjee as applied to claim 29 above, and further in view of Ise (6778601).

As for claim 32, Li, Manchester, Langlais, and Mukherjee fail to teach wherein equalization is adaptive and creates a filter response that restores a flat frequency response to overcome communication channel impairments caused by multipath signals.

In an analogous art, Ise teaches wherein equalization is adaptive and creates a filter response that restores a flat frequency response to overcome communication channel impairments caused by multipath signals (see abstract, col. 4, lines 33-47, col. 5, lines 17-27, lines 40-50).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Li, Manchester, Langlais, and Mukherjee 's invention to include the above mentioned limitation, as taught by Ise, in order to inhibit an excessive peak in the filter characteristic.

As for claim 34, Li, Manchester, Langlais, Mukherjee, and Ise disclose the claimed limitations. In particular, Langlais teaches wherein the terminal devices use orthogonal frequency division multiplexing (OFDM) modulation – col. 10, lines 55-58.

14. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li, Manchester, Langlais, and Mukherjee as applied to claim 34 above, and further in view of Nakakita (6061820).

As for claim 35, Li, Manchester, Langlais, and Mukherjee fail to teach wherein the terminal devices use forward error correction to recover the transmitted signal without errors.

In an analogous art, Nakakita teaches forward error correction is used so that the errors that occur can be recovered – col. 64, lines 53-60.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Li, Manchester, Langlais, and Mukherjee's invention to include the above mentioned limitation, as taught by Nakakita, for the advantage of transmitting signals without errors.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sumaiya A. Chowdhury whose telephone number is (571) 272-8567. The examiner can normally be reached on Mon-Fri, 9-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Grant can be reached on (571) 272-7292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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